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Experimental Hypothyroidism Led to Reduction in Adropin, Asprosin, and Preptin Levels in Rats

Dervis Dasdelen¹, Saltuk Bugra Baltaci¹, Rasim Mogulkoc¹, Abdulkerim Kasim
Baltaci¹, Abdullah Sivrikaya²

Affiliations: 1-Selcuk University, Medical School, Department of Physiology, Konya, Turkey

2-Selcuk University, Medical School, Department of Biochemistry, Konya, Turkey

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- Adropin is a 76 amino acid peptide, encoded by genes related to energy balance (Enho) and is found mainly in the liver and brain, and its identification (expression) depends on diet. It is also known that adropine, peptides secreted by peripheral tissues, regulates lipid metabolism in key insulin-target tissues.



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- Asprosin is a new glucogenic adipokine, a hormone encoded by two exons of the Fibrillin 1 (FBN1) gene and synthesized and secreted mainly by white adipose tissue during fasting.
- This hormone has a complex role in the central nervous system, peripheral tissues and organs, also participates in appetite regulation, glucose metabolism and insulin resistance.
- Asprosin is a hormone that is stimulated by hunger, has glucogenic and orexigenic effects, and after it is secreted, it goes to the liver and shows glucogenic effects.



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- Preptin secreted from pancreatic beta cells together with insulin and it plays an important role in glucose and bone metabolism.
- Preptin has an important place among the new markers responsible for metabolic disorders.
- Preptin, a peptide hormone, may play an important role in the development of obesity by regulating carbohydrate metabolism



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- Preptin, irisin, and adropin attract attention as key molecules that affect body mass index, lipids, glucose and insulin levels by being effective in energy regulation.



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AIM: The aim of this study was to determine the effects of hypothyroidism on adropin, asprosin and preptin levels in rats.

METHODS: The study was performed on the 22 male Wistar-albino rats. Experiment groups were designed as follows.

1-Control, Animals were fed by normal rats diet for two weeks.

2-Hypothyroidism; To induce hypothyroidism PTU was applied by intraperitoneal as 10 mg/kg/day for 2 weeks.

3-Hypothyroidism + Thyroxine; Previously animals were made with hypothyroidism by 1 weeks PTU application and then 1 week L-thyroxine was given by intraperitoneal as 1,5 mg/kg/day.

The end of supplementation animals were sacrificed and blood samples were collected for FT3, FT4, adropin, asprosin, preptin analysis.

T3 and T4 Analysis

Serum FT3 (lot no: 09186U100), FT4 (lot no: 08128U100) levels were analyzed in Architect i2000SR autoanalyzer using Abbott brand test kits.

Preptin, Adropin and Asprosin Analysis

Plasma Preptin, Adropin, Asprosin levels were analyzed using the SunRed brand (Catalog No: 201-11-3769, Catalog No: 201-11-3361, Catalog No: 201-11-5748) rat ELISA test kit, respectively

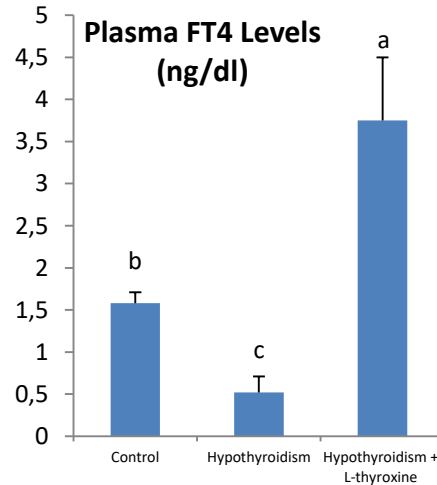
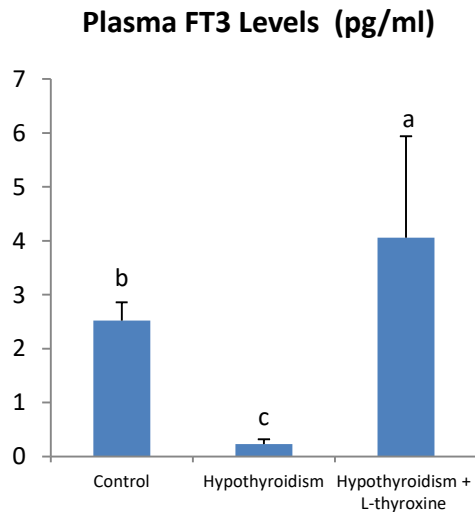
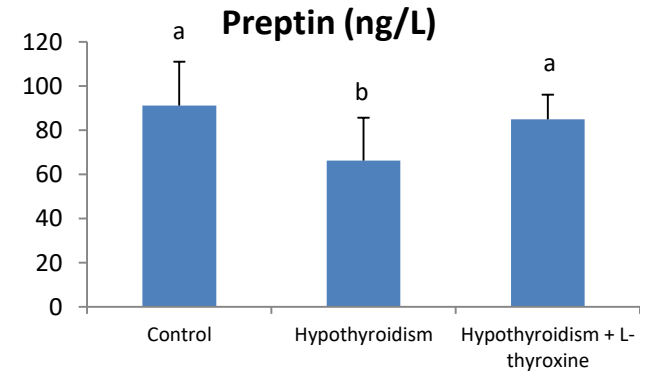
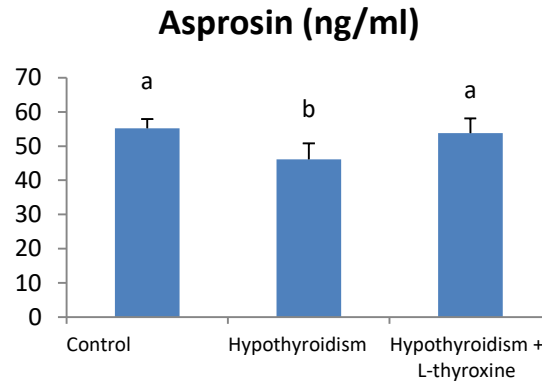
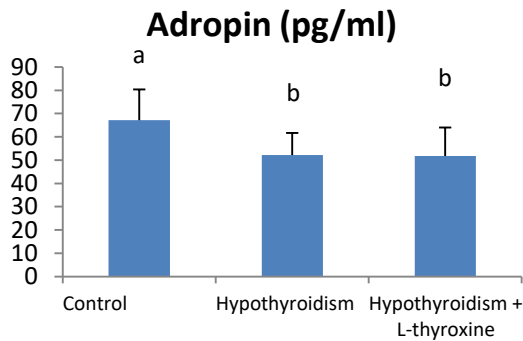


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RESULTS



FT3 ve FT4 levels were reduced significantly in hypothyroidism ($P < 0.001$).

Hypothyroidism led to reduction in adropin, asprosin and preptin levels.

However, thyroxine supplementaion after hypothyroidism corrected asprosin and preptin levels ($P < 0.001$).

Different letters in the same column are statistically significant ($p < 0.001$). $a > b > c$



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CONCLUSION: The results of the study show that experimental hypothyroidism led to significantly change to adropin, asprosin and preptin levels. However, correction of thyroid function lead to normals levels in asprosin and preptin.



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CONCLUSION: In future studies, it will be important to reveal how it affects the change in the mentioned hormones following the creation of a longer thyroid dysfunction.



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CONCLUSION: Since these hormones generally affect glucose metabolism due to insulin, a more detailed evaluation of pancreatic function and hormones secreted by the pancreas and together with them, changes in glucose level together with adropin, asprosin and preptin will provide a clearer understanding of the mechanisms.

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